

What is claimed is:

1. An apparatus for providing inter-processor communication using transmission control
2 protocol/Internet protocol in a communication system, the apparatus comprising:
3 an Ethernet interface module providing an interface between an Ethernet device driver and
4 an inter-processor communication module, determining a type of a received message, transmitting
5 the message when the determined type of the message is non-frame data, queuing the message in a
6 first mailbox corresponding to frame data when the determined type of the message is the frame data;
7 a message process module receiving the message transmitted by said Ethernet interface
8 module, queuing the message received from said Ethernet interface module in a second mailbox
9 corresponding to the non-frame data; and
10 a common application programming interface module providing an interface for performing
11 data transmission and reception through said message process module, for management of the first
12 and second mailboxes, for inter-processor communication buffer management, and for an inter-
13 processor communication control function, said common application programming interface module
14 being in communication with said Ethernet interface module and said message process module.

1. The apparatus of claim 1, said message process module determining a number of
2 messages queued in the second mailbox, deleting oldest messages from the second mailbox, and
3 queuing latest messages in the second mailbox when the number of messages is greater than a
4 predetermined number of messages.

1 3. The apparatus of claim 1, said common application programming interface module,
2 Ethernet interface module, and message process module communicating with each other in
3 accordance with transmission control protocol/Internet protocol.

1 4. A system providing inter-processor communication using transmission control
2 protocol/Internet protocol, the system comprising:

3 an access network controller being coupled to an Ethernet network and operating in
4 accordance with software instructions corresponding to 1x evolution-data only (1xEV-DO);

5 a wide area switching module being coupled to the Ethernet network and performing
6 operation and state management;

7 a data location register being coupled to the Ethernet network, performing subscriber
8 management and providing session information to said access network controller;

9 an element management system being coupled to the Ethernet network and performing
10 operation and management of the Ethernet network and said data location register;

11 a server being coupled to the Ethernet network and performing authentication for a 1x
12 evolution-data only (1xEV-DO) subscriber; and

13 an access network transceiver system transmitting 1x evolution-data only (1xEV-DO) data
14 and signalling data to said access network controller through the Ethernet network;

15 said access network controller performing a matching function with said access network
16 transceiver system for a packet data service, and performing call processing corresponding to 1x
17 evolution-data only (1xEV-DO);

18 said access network controller, wide area switching module, and element management system
19 communicating with each other by transmission control protocol/Internet protocol through the
20 Ethernet network.

1 5. The system of claim 4, said server corresponding to an access network-authorization,
2 authentication, accounting server providing system management, an operator interface, and a graphic
3 user interface for maintenance.

1 6. The system of claim 5, the system corresponding to an Internet protocol based
2 evolution-data only (EV-DO) system.

1 7. The system of claim 6, further comprising at least one communication subsystem, the
2 at least one communication subsystem comprising:

3 an Ethernet interface module providing an interface between an Ethernet device driver and
4 an inter-processor communication module, the Ethernet device driver being communication with the
5 Ethernet network, said Ethernet interface module determining a type of a received message,
6 transmitting the message when the determined type of the message is non-frame data, queuing the
7 message in a first mailbox corresponding to frame data when the determined type of the message is
8 the frame data;

9 a message process module receiving the message transmitted by said Ethernet interface
10 module, queuing the message received from said Ethernet interface module in a second mailbox

11 corresponding to the non-frame data; and
12 a common application programming interface module providing an interface for performing
13 data transmission and reception through said message process module, for management of the first
14 and second mailboxes, for inter-processor communication buffer management, and for an inter-
15 processor communication control function, said common application programming interface module
16 being in communication with said Ethernet interface module and said message process module, the
17 inter-processor communication module being selected from among said access network controller,
18 said wide area switching module, and said element management system.

1 8. The system of claim 7, said message process module determining a number of
2 messages queued in the second mailbox, deleting oldest messages from the second mailbox, and
3 queuing latest messages in the second mailbox when the number of messages is greater than a
4 predetermined number of messages.

1 9. The system of claim 8, said common application programming interface module,
2 Ethernet interface module, and message process module communicating with each other in
3 accordance with transmission control protocol/Internet protocol.

1 10. The system of claim 9, the communication subsystem including software for
2 transmitting and receiving the messages between application tasks in said access network controller,
3 wide area switching module, and element management system.

1 11. A method providing inter-processor communication using transmission control
2 protocol/Internet protocol in a communication system, the method comprising:

3 operating an access network controller in accordance with software instructions
4 corresponding to 1x evolution-data only (1xEV-DO), the access network controller being coupled
5 to an Ethernet network, the access network controller performing call processing corresponding to
6 1x evolution-data only (1xEV-DO);

7 performing operation and state management with a wide area switching module coupled to
8 the Ethernet network;

9 performing subscriber management with a data location register coupled to the Ethernet
10 network, the data location register providing session information to the access network controller;

11 performing operation and management of the Ethernet network and of the data location
12 register with an element management system coupled to the Ethernet network;

13 performing authentication for a 1x evolution-data only (1xEV-DO) subscriber with a server
14 coupled to the Ethernet network; and

15 transmitting 1x evolution-data only (1xEV-DO) data and signalling data to the access
16 network controller through the Ethernet network with an access network transceiver system, the
17 access network controller performing a matching function with the access network transceiver
18 system for a packet data service; and

19 performing intercommunication between the access network controller, wide area switching
20 module, and element management system by transmission control protocol/Internet protocol through

21 the Ethernet network.

1 12. The method of claim 11, the server corresponding to an access network-authorization,
2 authentication, accounting server providing system management, an operator interface, and a graphic
3 user interface for maintenance.

1 13. The method of claim 12, the communication system corresponding to an Internet
2 protocol based evolution-data only (EV-DO) system.

1 14. The method of claim 13, further comprising:
2 determining a type of a received message;
3 transmitting the message when the determined type of the message is non-frame data;
4 queuing the message in a first mailbox corresponding to frame data when the determined type
5 of the message is the frame data;
6 said determining, said transmitting, and said queuing of the message in the first mailbox
7 being performed by an Ethernet interface module provided between an Ethernet device driver and
8 an inter-processor communication module, the inter-processor communication module being selected
9 from among the access network controller, the wide area switching module, and the element
10 management system, the Ethernet device driver being communication with the Ethernet network;
11 receiving the message transmitted by the Ethernet interface module at a message process
12 module;

13 queuing the message received from the Ethernet interface module in a second mailbox
- 14 corresponding to the non-frame data, said queuing of the message in the second mailbox being
- 15 performed by the message process module; and
16 providing a common application programming interface module for performing data
17 transmission and reception through the message process module, for management of the first and
18 second mailboxes, for inter-processor communication buffer management, and for an inter-processor
19 communication control function, the common application programming interface module being in
20 communication with the Ethernet interface module and the message process module.

1 15. The method of claim 14, further comprising:
2 determining a number of messages queued in the second mailbox;
3 deleting oldest messages from the second mailbox; and
4 queuing latest messages in the second mailbox when the number of messages is greater than
5 a predetermined number of messages, said determining of the number of messages queued in the
6 second mailbox, said deleting of the oldest messages, and said queuing of the latest messages being
7 performed by the message process module.

1 16. The method of claim 15, the common application programming interface module,
2 Ethernet interface module, and message process module communicating with each other in
3 accordance with transmission control protocol/Internet protocol.